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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,970	03/29/2001	Paul S. Levy	42390P10694	8299

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EXAMINER

ROJAS, OMAR R

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 09/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/822,970

Applicant(s)

LEVY ET AL.

Examiner

Omar Rojas

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✓

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-31, 34, 35, 37-39 and 42 is/are rejected.
- 7) ☒ Claim(s) 32, 33, 36, 40 and 41 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.


Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: 

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include most of the reference sign(s) mentioned in the description. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claim 17 is objected to because of the following informalities: Claim 17 appears to be missing the word "to" between the words "parallel" and "the first circuit board." Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1-2, 4-14, and 16-25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by US 4,850,044 to Block et al. ("Block").**

Block discloses a method/system comprising:

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at least a first and second circuit board (15a-15f) wherein said first circuit board (15a) has laser transmitters (21a, 23a), which inherently transmit at first and second particular frequencies through the air, and light receivers (20a, 22a) which are tuned to corresponding particular frequencies; said transmitters and receivers being affixed to both the top and bottom surfaces of the first circuit board (15a) as seen in Fig. 2. Similarly, Block discloses the same corresponding features of laser transmitters (21, 23) and light receivers (20, 22) affixed on both sides of the other circuit boards (15b-15f) so that the circuit boards may communicate in pairs when coupled to a backplane housed within a system chassis (1) as seen in Figure 1. Also shown in Figure 1 are corresponding fiber optic cables (19) which are operatively coupled to one or more circuit boards (15). In Figure 4, Block shows a fiber optic element (300) coupling the laser transmitter to the photodiode. The remaining features recited by claims 1-2, 4-14, and 16-25 are also expressly disclosed or inherently present in Block's disclosure. See Block at columns 4-5.

6. Claims 1-2, 4-5, 7-11, 14, 16-17, 19-25, 37-39, and 42 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by US 5,204,866 also to Block et al. ("Block II").

As seen in Figs 2-3, Block II discloses the claimed features of:

at least a first and second circuit board (200) wherein said first circuit board (200) has an aperture (211), a laser transmitter (110), which inherently transmits at first particular frequency through the air, and a light receiver (150) which is tuned to a corresponding particular frequency; said transmitter and receiver being affixed to a surface of the first

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circuit board (200) as seen in Fig. 2. Similarly, Block discloses the same corresponding features of aperture (211), laser transmitter (110) and light receiver (150) affixed to a surface of the other circuit boards (200) so that the circuit boards may communicate with each other when coupled to a backplane connector (230) and housed within a system chassis (300) as seen in Figure 3. Block II further discloses that the apertures (211) allows a data signal to be transmitted bi-directionally through the air from a light transmitter on either a first or second circuit board (200). The remaining features recited by claims 1-2, 4-5, 7-11, 14, 16-17, 19-25, 37-39, and 42 are also expressly disclosed or inherently present in Block II's disclosure. See Block II at columns 3 and 6.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Block.

Regarding claims 3 and 15, the examiner incorporates the previous remarks concerning Block.

Thus, Block only differs from claims 3 and 15 in that the use of a VCSEL is not expressly disclosed.

However, the use of VCSELs was well known at the time of the claimed invention.

One of ordinary skill in the art would want to expressly use a VCSEL in Block because VCSELs were known to have desirable advantages over regular laser diode transmitters, such as low beam divergence.

Therefore, it would have been obvious to one of ordinary skill at the time of the claimed invention to obtain the invention specified by claims 3 and 15 in view of Block and VCSEL technology that was already well known.

10. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Block II.

Regarding claims 3 and 15, the examiner incorporates the previous remarks concerning Block II.

Thus, Block II only differs from claims 3 and 15 in that the use of a VCSEL is not expressly disclosed.

However, the use of VCSELs was well known at the time of the claimed invention.

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One of ordinary skill in the art would want to expressly use a VCSEL in Block II because VCSELs were known to have desirable advantages over regular laser diode transmitters, such as low beam divergence.

Therefore, it would have been obvious to one of ordinary skill at the time of the claimed invention to obtain the invention specified by claims 3 and 15 in view of Block II and VCSEL technology that was already well known.

11. Claims 26-31 and 34-35 are rejected under 35 U.S.C. 103(a) as being obvious over Block II in view of Block.

Regarding claims 26-31 and 34-25, the examiner incorporates the previous remarks under the 102 section.

Thus, Block II expressly differs from claims 26-31 and 34-35 in that Block II does not disclose having first, second, and third light receivers on a bottom surface of the first circuit board; first and second light transmitters affixed to the top surface of the second circuit board, and having fourth and fifth light receivers affixed to its bottom surface; having a third, fourth, and fifth light transmitter affixed to a top surface of the third circuit board; and coupling the receivers and transmitters in the recited manner.

Block, however, shows that receivers and transmitters can be affixed to both top and bottom surfaces of a circuit board. Such a configuration would obviously be desirable when extra optical information is to be transmitted between circuit boards.

Furthermore, adding more transmitters and receivers to the invention of Block II and coupling them together would be considered an obvious design choice because this merely amounts to a duplication of parts.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claims 26-31 and 34-35 in view of the disclosures of Block and Block II.

Allowable Subject Matter

12. Claims 32, 33, 36, 40, and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 32-33, there is no suggestion in view of either Block reference, nor does it appear it would have been obvious, to initiate an orderly shutdown and rerouting of a faulted data signal when a change in transmission intensity of the faulted data signal is detected. Such a disclosure appears to be an improvement over the Block references with regards to fault detection within the circuit boards.

Regarding claims 36, 40, and 41, there is no suggestion in view of either Block reference, nor does it appear it would have been obvious, to use a redundant or backup circuit board operating in a "shadow" mode until either a change in a transmission intensity is detected, or until ordered to carry data traffic from a faulted optical channel. Such a disclosure appears to be an improvement over the Block references with regards to fault detection within the circuit boards.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,038,355 discloses an optical bus between parallel circuit boards. US 5,548,772 discloses a parallel processing system with programmable optical interconnects.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (703) 305-8528 and whose e-mail address is *omar.rojas@uspto.gov*. The examiner can normally be reached on Monday-Friday (7:00AM-3:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hemang Sanghavi, can be reached on (703) 305-3484. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722 for regular communications. The examiner's personal work fax number is (703) 746-4751.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Omar Rojas
Patent Examiner
Art Unit 2874

or
August 21, 2003



Brian Healy
Primary Examiner